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## Volume transmission and neurotransmitter homeostasis

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In volume transmission, neurons in one brain nucleus send their axons to a second nucleus where neurotransmitter is released into the extracellular space. In [1] we showed how to calculate the average amount of neurotransmitter at different parts of the extracellular space, depending on neural properties and the geometry of the projections and extracellular space. We showed how to formulate questions as boundaries value problems for the heat equation with stochastically switching boundary conditions, and we derived results in one space dimension.

Here we discuss the two- and three-dimensional problems, along with mechanistic models of neurotransmitter homeostasis.

[1] Lawley, Best, Reed 2016

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